FEDOROV, G.A.

Introduction multiple machining at the Voronezh Excavator Plant. Mashinostroitel' no.1:25-26 Ja '64. (MIRA 17:2)

ZAGZHDA, V.P.; TIKHONOVA, L.A.; SOKOLOV, V.I.; MARANTS, A.G.; RYBNIKOV, V.A.; KAZAKEVICH, S.S.; SARMIN, A.P.; GAVRILOV, A.I.; NOVIKOV, A.N.; NECHEPORENKO, M.A.; KAL'MOVA, Ye.A.; FEDOROV, G.A., redaktor; FEL'DGANDLER, G.G., redaktor; ROZENTSVEYG, Ya.D., redaktor izdatel'stva; MIKHAYLOVA, V.V., tekhnicheskiy redaktor

[Handbook on refractory elements and materials] Spravochnik na ogneupornye izdeliia, materialy i syr'e. Sostavlen po gosudarstvennym standartam i tekhnicheskim usloviiam. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1956. 195 p. (MLRA 10:2)

1. Russia (1923- U.S.S.R.) Ministerstvo chernoy metallurgii. 2. Leningradskiy institut ogneuporov. (for Zagzhda, Tikhonova, Sokolov, Marants, Rybnikov, Kazakevich, Sarmin, Gavrilov, Novikov, Necheporenko, Kal'mova.

(Refractory materials)

FEDOROV, G. A.

MUKHIN, A.S., inzhener; FEDOROV, G.A., inzhener.

Holder for cermet cutting tools. Stroi. i dor.mashinostr. 1 no.2:34-35 F '56. (MLRA 10:1)

(Cutting tools)

AUTHOR: Fedorov, G.A., Engineer SOV-117-58-4-14/21

TITLE: High-Speed Lathe Operator (Tokar'-skorostnik)

PERIODICAL: Mashinostroitel', 1958, Nr 4, p 36 (USSR)

ABSTRACT: This is a biography of lathe operator A.M. Vorontsov (see cover photograph) of the Voronezhskiy ekskavatornyy zavod (Voronezh Excavator Plant) and Deputy of the Supreme Soviet.

1. Lather--Operation 2. Personnel--Performance

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PHASE I BOOK EXPLOITATION SOV/4754

Vsesoyuznoye soveshchaniye po gruppovym tekhnologicheskim protsessam v mashinostroyenii i priborostroyenii. 1st, Leningrad, 1959

Gruppovaya tekhnologiya v mashinostroyenii i priborostroyenii (Group-Processing Methods in the Machine and Instrument Industries) Moscow, Mashgiz, 1960. 378 p. Errata slip inserted. 7,000 copies printed.

Ed. (Title page): S.P. Mitrofanov, Lenin Prize Winner, Candidate of Technical Sciences; Eds.: A.S. Azarov, Candidate of Technical Sciences, N.S. Gutner, Engineer, P.V. Kamnev, Candidate of Technical Sciences, A.K. Kutay, Candidate of Technical Sciences, A.A. Reznikov, Engineer, and G.N. Shalgin, Candidate of Economic Sciences; Managing Ed. for Literature on Machine-Building Technology (Leningrad Department, Mashgiz): Ye.P. Naumov, Engineer; Ed. of Publishing House: N.Z. Simonovskiy; Tech. Ed.: O.V. Speranskaya.

PURPOSE: This collection of articles is intended for technical personnel in machine plants, designing organizations, and scientific-research institutes. It may also be useful to skilled workers.

COVERAGE: The collection consists of papers presented at [illegible] Conference on Group Processing in the Machine and Instrument Industries, held November 24-28, 1959 in Leningrad. The conference was called by scientific and technical societies of the machine and instrument industry, GNTK RSFSR, and Lensovnarkhoz. The articles are based on the experience of industry in introducing the grouping principle in processing. They discuss basic trends in development, and group machining as the basis of mechanized continuous production. The designing of automatic production lines, construction of accessories, and modernization and specialization of equipment are discussed. Problems dealing with the introduction of group-machining methods into processing on various machine tools and into production of blanks (casting, presworking, pressing of plastics) are considered. Planning, standardization, and methods for calculating the economic effectiveness of group processing are also treated. No personalities are mentioned. There are no references.

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FEDOROV, G.A., inzh.

Using combined copying devices for increasing the labor productivity in machining parts on lathes. Stroi.i dor.mashinostr. no.7:26-27 Jl '59. (MIRA 12:11)
(Lathes--Attachments)

FEDOROV, G.A., inzh.

Lathe operator efficiency promoter K.I.Zolotarev and his methods. Stroi.i dor.mashinostr. no.7:36-37 Jl '59.
(MIRA 12:11)

(Lathes--Attachments)

FEDOROV, G.A., inzh.

Lot machining of parts guarantees an increase in labor productivity. Stroi.i dor.mashinostr. 4 no.9:32-33 S '59.
(MIRA 12:11)

(Machine-shop practice)

FEDOROV, G.A., inzh.

Equipment for the multiple machining of parts. Stroi. i dor. mashinostr. 5 no.5:24-27 My '60. (MIRA 14:4)
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FEDOROV, G.A., inzh.

Use of pneumatic clamp devices at the Voronezh Excavator Plant.
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Study of the process of hydration of ferro-aluminous cements.
Nauch. soob. NIITSementa no.11:32-39 '61. (MIRA 15:2)
(Cement--Testing)

PROSKURYAKOV, Yu.G.; PETROV, V.N.; FEDOROV, G.A.

Breaking chips during the machining of steel 10. Stan.i instr. 33 no.7:23-24 Jl '62. (MIRA 15:7)
(Metal cutting)

FEDOROV, G.A.; KONSTANTINOV, I.Ye.

Use of the modeling method in determining the efficiency of a scintillation spectrometer. Vop. dozim. i zashch. ot izluch. no.1:121-124 '62. (MIRA 16:3)

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BUTT, Yu.M.; ROYAK, S.M.; KRYLOV, V.F.; FEDOROV, G.A.

Study of ferroalumina cements obtained in an oxidizing atmosphere.
TSement 28 no.1:13-16 Ja-F '62. (MIRA 16:5)
(Cement clinkers)

FEDOROV, G.A., insh.

Introduction of group method processing into small lot production. Stroi i dor. mash. 8 no.12: 29-30 D'63 (MIRA 17:7)

ACCESSION NR: AR4043993 S/0058/64/000/006/A045/A045

SOURCE: Ref. zh. Fizika, Abs. 6A415

AUTHOR: Stolyarova, Ye. L.; Kramer-Ageyev, Ye. A.; Fedorov, G. A.

TITLE: A fast-neutron spectrometer with organic boron scintillator

CITED SOURCE: Sb. Stsintillyatory* i stsintillyats. materialy*. Khar'kov, Khar'kovsk. un-t, 1963, 167-169

TOPIC TAGS: fast neutron spectrometer, scintillator, organic boron scintillator

TRANSLATION: Examines the principle of operation of a fast-neutron spectrometer with an organic boron scintillator. For two such scintillators, gives calculations of the efficiency for various incident-neutron energies. The first scintillator is a solution of 4 g/l p-terphenyl in an equal mixture of trimethyl borate and o-xylene; the second is a solution of 4 g/l of p-terphenyl in an equal mixture of toluene and trimethyl borate. The diameter and height of the container of the first

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ACCESSION NR: AR4043993

scintillator was 40 mm, of the second--80 mm. The calculation results are given in the form of graphs. Gives experimental neutron spectra of the Po-Be source obtained using each of these scintillators. Discusses the advantages of fast-neutron spectrometers with organic boron scintillator compared with other types of spectrometers.

SUB CODE: NP, OP ENCL: 00

Card 2/2

ACCESSION NR: AT4021268 S/2892/63/000/002/0171/0178

AUTHOR: Fedorov, G. A., Konstatinov, I. Ye.

TITLE: On the method of determining the cesium 137 content in soils

SOURCE: Voprosy* dozimetrii i zashchity* ot izlucheniy*, no. 2, 1963, 171-178

TOPIC TAGS: cesium 137, γ radiation, radioactive fallout, scintillation spectrometer, photoelectric efficiency

ABSTRACT: In this paper, the authors point out three basic methods for the selection of samples which make it possible to establish the fallout speed and accumulation of radioactive residue: collection of rain water, dust, or snow, by means of open containers, the use of adhesive boards and the selection of soil samples. Soil samples yield the most valuable information on the possible danger of radioactive radiation for man. Certain methodical problems related to the application of a scintillation γ spectrometer for determining the cesium 137 content in soils are examined. In their research involving this method, the authors measured the γ spectra of the samples. For this purpose the crystal NaJ(Te) with d=70 mm and h=55 mm, and an impulse amplitude analyzer AI-100 were used. The sensitivity of the method is adequate for registering the activity of cesium 137 with high

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ACCESSION NR: AT4021268

accuracy in soil samples at existing levels of contamination. The method makes it possible to determine the relative activity of cesium 137 and natural radioactive isotopes. The use of the graphic method of expanding the spectrum of impulses which is the simplest and in this case, the most reliable, is deemed trustworthy. Orig. art. has: 4 figures.

ASSOCIATION: Moskovskiy inzhenerno-fizicheskiy institut (Moscow Physics and Engineering Institute)

SUBMITTED: 00 DATE ACQ: 06Apr64 ENCL: 00

SUB CODE: NS, PH NO REF SOV: 002 OTHER: 005

Card 2/2

FEDOROV, G.A.

Universal multiple jig for drilling holes. Mashinostroitel' no. 5:15 My '64. (MIRA 17:7)

FEDOROV, G.A.

Innovator council helps introduce multiple machining methods.
Mashinostroitel' no.6:6-7 Je '64. (MIRA 17:8)

PROSKURYAKOV, Yu.G.; FEDOROV, G.A.; DAVIDYUK, V.I.

Breaking chips in machining the ends of gas pipes. Stan. i instr. 36 no.6:37-38 Je '65. (MIRA 18:8)

FEDOROV, G.A.

Attachment for milling longitudinal lubrication grooves. Biul.tekh.-ekon.inform.Gos.nauch.-issl.inst.nauch.i tekh. inform. 18 no.11:58-59 N '65.

(MIRA 18:12)

FEDOROV, G. B.

30-2-19/49

AUTHOR: Fedorov, G. B., Candidate of Historical Sciences

TITLE: Joint Work of Rumanian and Soviet Archaeologists (Sovmestnyye raboty rumynskikh i sovetskikh arkheologov)

PERIODICAL: Vestnik Akademii Nauk SSSR, 1958, Nr 2, pp 81-84 (USSR)

ABSTRACT: Last year the common archaeological and ethnographical research began. A group of scientific collaborators of the Institute for Archaeology of the Academy of the Rumanian People's Republic and its branch of Jassy took part in the work of the Pruth-Dnestr expedition in August-September, 1957. The scientists in question were the excellent Rumanian archaeologist Professor Radu Vul'pe, Professor G. Dumitresku, M. Komsha, Ye. Komsha and A. Floresku, as well as the young Rumanian ethnography-assistants R. Mayyer and Ye. Rangu. The field work of the expedition was carried out in different districts of the Moldavian SSR, in the area Odessa of the Ukrainian SSR, in the river-basin of the Danube, Pruth, Dnestr and Reut, in the course of which many monuments dating back to different periods were discovered and investigated.

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Joint Work of Rumanian and Soviet Archaeologists

In 1957 a department of the expedition under the direction of R. Vul'pe has carried out excavations of the burial-place of Lukashevka and of a settlement. Material of the type already discovered in 1949 by R. Vul'pe near the village of Poyaneshty (Rumania) was found. The Soviet Pruth-Dnestr expedition in 1953 discovered a similar burial-place in the river-basin of the Reut near the village of Lukashevka. The discoveries are household-pits, ruins of habitations, many productions and working-implements, which make it possible to judge the way of life, the economy and the production of the population in the last centuries before Christ. A small idol made from bronze (illustration 1), which was found in a settlement, can be regarded as unique. In 1957 near the villages of Lukashevka and Alchedar(district Rezinsk of the Moldavian SSR) Slavic settlements were excavated, where rests of habitations, ceramic and iron-foundry horns, corn pits, various pottery, hand-made products, working implements, fineries, arms, commodities and other things were found. A massive cast necklace made from silver dating from the 9th - 10th century after Christ has to be regarded as unique and it certainly can only have belonged to a distinguished person (figure 2). In

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Joint Work of Rumanian and Soviet Archaeologists

1957 the expedition has carried out excavations of a Slavic settlement from the 9th - 10th century after Christ on the left bank of the lower Danube near the village of Krinichnoye, which settlement belongs to the Bulgarian civilization. All of these common Soviet-Rumanian excavations are described in detail and commented by the author. The Rumanian archaeologists work in Soviet areas. The Soviet archaeologists G. B. Fedorov, G. D. Smirnov, I. B. Zeyest and P. P. Byrnya on the other hand participated in the field-work in Rumania in September 1957. From August 20 - 25, 1957, the first Slavic-Rumanian-Moldavian Seminar on problems of the Slavic-Rumanian-Moldavian archaeology and ethnology was held at the camp near Alchedar, in which scientific collaborators from Moscow, Kishinev, Kiyev, Odessa, Lemberg, Minsk and others participated. It was decided to hold two more seminars in Kishinev and Bukarest in 1958. There are 2 figures.

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Joint Work of Rumanian and Soviet Archaeologists

AVAILABLE: Library of Congress

1. Archaeology-USSR 2. Archaeologists-Rumania

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SOV/30-59-4-17/51

30(6)

AUTHOR: Fedorov, G. B., Candidate of Historical Sciences

TITLE: News in Brief (Kratkiye soobshcheniya). The Third Soviet-Rumanian Seminar on Archeology and Ethnography (Tretiy sovetsko-rumynskiy seminar po arkheologii i etnografii)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 4, p 104 (USSR)

ABSTRACT: The Seminar took place in Bucharest between December 26th, 1958 and January 5th, 1959 and dealt with problems of the ancient and medieval history of Rumania and the South-west of the USSR. Since 1957 joint Soviet-Rumanian research work is carried out and seminars are held in the Moldavskaya SSR and the People's Republic of Rumania. The work was carried out in a number of plenary meetings and three committees. The reports delivered by the Rumanian archeologists V. Ştefan, and M. Conr sa were regarded as interesting. The members of the Soviet delegation held the following reports: G. B. Fedorov spoke about the history of material civilization of the population of the South-west of the USSR in the first millenium of the new calendar; N. Ya. Merpert reported on the research of the history of the oldest Bulgarian tribes by Soviet archeologists. G. D. Smirnov gave new data concerning the history of the

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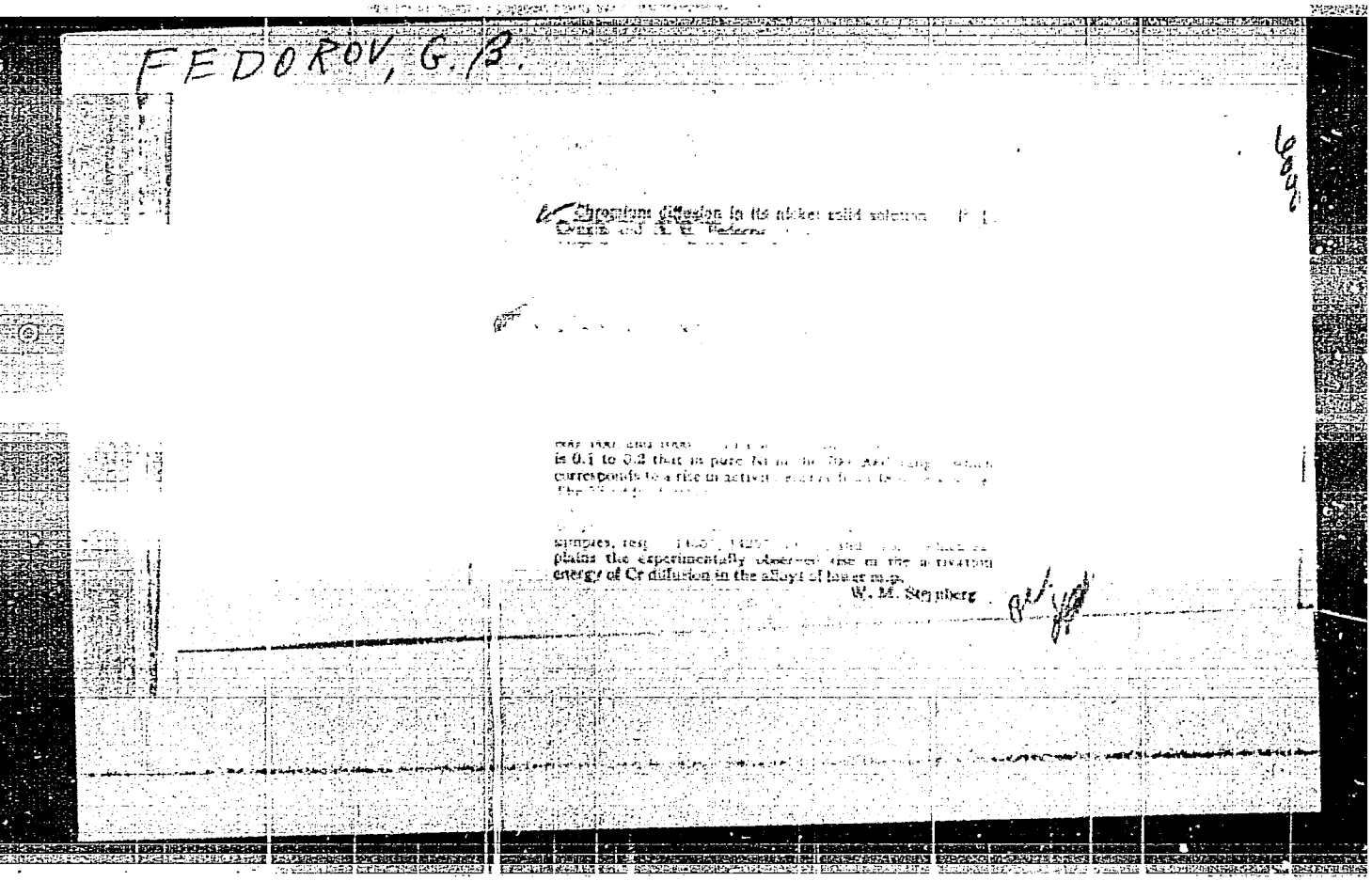
News in Brief. The Third Soviet-Rumanian Seminar on Archeology and Ethnography

medieval Moldavian town. P. P. Byrni dealt with archeological material characteristic of the life of the medieval Moldavian village. M. Ya. Salmanovich reported on ethnographical research in the region of the Moldavskaya SSR. V. D. Blavatskiy delivered a report on the conditions of the property of the inhabitants of the Bosporus from the sixth until the second century of the new calendar, Ye. I. Levi dealt in his report with the research of the Ol'viyskaya agora, and M. A. Tikhanova with the population of the woodland-steppe zone of Central and East Europe in the first half of the first millenium of the new calendar. The scientists attending the seminar outlined a definite plan of collaboration in 1959. There is 1 Soviet reference.

FEDOROV, G.B., doktor istoricheskikh nauk

Border line. Nauka i zhizn' 29 no.3:40-47, 92 Mr '62. (MIRA 15:7)
(Novgorod--Excavations (Archaeology))



FEDOROV, G.B.

Chromium diffusion in its nickel solid solution

is 0.1 to 0.2 that in pure

plains the experimentally

energy of Cr diffusion in the alloys of lower m.p.

W. M. Stepiberg

FEDOROV, G.B.

USSR/Physical Chemistry - Crystals. B-5

Abs Jour : Referat Zhur - Khimiya, No 1, 1958, 232

Author : P.L. Gruzin, Yu.A. Polikarpov, G.B. Fedorov.
Inst : -
Title : Study of Diffusion of Carbon in Nickel and Its Alloys Using Radioactive Isotope C^{14}.

Orig Pub : Fiz. metallov i metallovedeniye, 1957, 4, No 1, 94-102

Abstract : The method of the study of the diffusion of C in metals using C^{14} was developed. The tagged C was applied to the metal surface by short-time cementation. Parallel layers were machined off after the diffusion annealing. The total radioactivity I of the remaining portion of the specimen was measured after the removal of each layer, and graphs of the dependence of I on the thickness of the removed layers x, and of the dependence of ln I on x^2 were plotted. The diffusion factor D was determined by the equation $D = (\alpha/\beta - 1) / 4\alpha t$, where β is the slant of

Card 1/2 Inst Metallography Physics of Metals, Cand Sci Res Inst. Ferrous Metals & Moscow Eng. Physics Inst

Abs Jour : Ref Zhur - Khimiya, No 1, 1958, 232

the line $\ln I = f(x^2)$, and α is the slant of a line of the same kind plotted for the thin surface layer of the specimen after cementation. It was found for the diffusion of C in Ni at 500 to 900° that the pre-exponential factor D_o 0.1 $cm^2 sec^{-2}$ and the activation energy Q = 33 kcal per g-atom. The alloying of nickel with Cr, Co or Mo (1 to 5%) results in a small increase of D_o and Q, D remaining practically constant, which agrees with the known peculiatities of the arrangement of C in metal lattices. D for C is 10^5 to 10^6 times greater than D for metal in metal. The importance of obtained results for metallurgy is discussed.

FEDOROV, G. B., Cand. Tech. Sci.;

"An Investigation of the Mobility of Carbon Atoms in Steel and Alloys with the Use of the Isotope C^{14}," with Gruzin, P. L., Dr. Phys. and Math. Sci.; Babikova, Ye. F.; Borisov, Ye. V.; Zemskiy, S. V.; Peregudov, N. P.; Polikarpov, Yu. A.; Tirkina, A. N.; Fedorov, G. B., Cand. Tech. Sci.; Shumilov, M. A., Cand. Tech. Sci., page 327.

In book Problems of Physical Metallurgy, Moscow, Metallurgizdat, 1958, 603p. (Its: Sbornik trudov, v. 5)

The articles in the book present results of investigations conducted by the issuing body, Inst. of Physical Metallurgy, a part of the Cent. Sci. Res. Inst. of Ferrous Metallurgy, located in Dnepropetrovsk. The investigations were concerned with phase transformations in alloys, strengthening and softening processes, diffusion processes (studied with the aid of radioactive isotopes), and certain other questions.

81501

SOV/137-59-9-10629

18.7500

Translation from: Referativnyy zhurnal, Metallurgiya, 1959, Nr 5, p 166 (USSR)

AUTHORS: Gruzin, P.L., Polikarpov, Yu.A., Fedorov, G.B., Shumilov, M.A.

TITLE: Investigations into Carbon Diffusion in Alloys With the Use of the C^{14} Radioactive Isotope

PERIODICAL: V sb.: Metallurgiya i metallovedeniye, Moscow, AS USSR, 1958, pp 246 - 252

ABSTRACT: The authors investigated the diffusion of C in ferrite (alloyed with Ni, Mo, Cr, Mn) Si in austenite (alloyed with Si) and in Ni (alloyed with Cr, Co, Mo). The diffusion coefficient D was determined by the method of removing the layers and measuring the integral radioactivity of the remaining section of the specimen. Introduction of Si into the ferrite increased the pre-exponential multiplier D_0 and also the activation energy Q. The same effect was exerted by alloying with Ni, while Mo and Cr produced the greatest effect. Thus if the Mo content was 2.58%, D_0 increased from 0.2 to 20.0 cm^2/sec, and Q from 24.6 to 33.5 kcal/g-atom. The introduction of 0.93% Cr gave D = 16.4 cm^2/sec and Q =

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SOV/137-59-5-10629

Investigations Into Carbon Diffusion in Alloys With the Use of the C^{14} Radioactive Isotope

33.6 kcal/g-atom. Alloying of nickel with 0.74% and 4.65% Cr, 5.25% Co and 2.94% Mo, caused in any case an increase in Q due to the stronger bonds of C atoms was in the crystalline lattice of Ni. The same effect on the C diffusion in γ Fe was produced by an addition of Cr and Mo. The addition of Co reduced the value of Q for C diffusion in γ Fe. There was almost no difference in the rates of C diffusion in Ni and γ Fe. At all temperatures, D of C was 10^5 - 10^{10} times higher than D of the metal. The rates of C diffusion in the ferrite and austenite were very different. This explains some peculiarities in the process of stepped case-hardening of steel. The first case-hardening stage is conducted in the γ -phase range. At the second stage, case-hardening is conducted in the α phase range, since diffusion takes place at a higher rate.

I.D.

Card 2/2

FEDOROV, G.B

(4) PHASE I BOOK EXPLOITATION SOV/2713

International Conference on the Peaceful Uses of Atomic Energy. 2nd, Geneva, 1958

Doklady sovetskikh uchenykh; polucheniye i primeneniye izotopov (Reports of Soviet Scientists; Production and Application of Isotopes) Moscow, Atomizdat, 1959. 588 p. (Series: Its: Trudy, vol. 6) 8,000 copies printed.

Eds. (Title page): G.V. Kurdyumov, Academician, and I.I. Novikov, Corresponding Member, USSR Academy of Sciences; Ed. (Inside book): Z.D. Andreyenko; Tech. Ed.: Z.D. Andreyenko.

PURPOSE: This book is intended for scientists, engineers, physicians, and biologists engaged in the production and application of atomic energy to peaceful uses; for professors and graduate and nongraduate students of higher technical schools where nuclear science is taught; and for the general public interested in atomic science and technology.

COVERAGE: This is volume 6 of a 6-volume set of reports delivered by Soviet scientists at the Second International Conference on the Peaceful Uses of Atomic Energy held in Geneva from September 1 to 13, 1958. Volume 6 contains 32 reports on: 1) modern methods for the production of stable radioactive isotopes and their labeled compounds, 2) research results obtained with the aid of isotopes in the field of chemistry, metallurgy, machine building, and agriculture, and 3) dosimetry of ionizing radiation. Volume 6 was edited by: S.V. Levinskiy, Candidate of Medical Sciences; V.N. Prusakov, Candidate of Chemical Sciences; and V.V. Sedov, Candidate of Medical Sciences. See SOV/2081 for titles of volumes of the set. References appear at the end of the articles.

FEDOROV, G.B.

PHASE I BOOK EXPLOITATION SOV/3559

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po probleme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. 5 (Investigations of Heat-Resistant Alloys, Vol 5) Moscow, Izd-vo AN SSSR, 1959. 423 p. Errata slip inserted. 2,000 copies printed.

Ed. of Publishing House: V.A. Klimov; Tech. Ed.: I.F. Kuz'min; Editorial Board: I.P. Bardin, Academician, G.V. Kurdyumov, Academician, N.V. Ageyev, Corresponding Member, USSR Academy of Sciences (Resp. Ed.), I.A. Oding, I.M. Pavlov, and I.F. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgical engineers, research workers in metallurgy, and may also be of interest to students of advanced courses in metallurgy.

COVERAGE: This book, consisting of a number of papers, deals with the properties of heat-resisting metals and alloys. Each of the papers is devoted to the study of the factors which affect the properties and behavior of metals. The effects of various elements such as Cr, Mo, and W on the heat-resisting properties of various alloys are studied. Deformability and workability of certain metals as related to the thermal conditions are the object of another study described. The problems of hydrogen embrittlement, diffusion and the deposition of ceramic coatings on metal surfaces by means of electrophoresis are examined. One paper describes the apparatus and methods used for growing monocrystals of metals. Boron-base metals are critically examined and evaluated. Results are given of studies of interatomic bonds and the behavior of atoms in metal. Tests of turbine and compressor blades are described. No personalities are mentioned. References accompany most of the articles.

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FEDOROV, G.B.; GULYAKIN, V.D.

Zirconium and tin diffusion in stannous alloys of β-zirconium. Met.i metalloved.chist.met. no.1:170-178 '59. (MIRA 12:10)

(Zirconium-tin alloys) (Diffusion)

28551

18.7500

S/137/61/000/009/026/087
A060/A101

AUTHORS: Borisov, Ye.V., Gruzin, P.L., Pavlinov, L.V., Fedorov, G.B.

TITLE: Self-diffusion of molybdenum and diffusion of tungsten in molybdenum

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 9, 1961, 3, abstract 9Zh11 ("Metallurgiya i metallovedenie chist. metallov", no. 1, Moscow, 1959, 213 - 218)

TEXT: The self-diffusion of Mo and the diffusion of W in Mo were studied in the interval 1,800-2,175°C by the use of radioactive isotopes Mo^{69} and W^{185}. The annealing time was from a few hours up to tens of hours. Samples of Mo obtained by arc-smelting in vacuum were subjected to preliminary annealing at 1,500 °C for a period of 20 hrs in a H_2 atmosphere. To determine the diffusion coefficient the method of measuring the total activity of the sample remainder was used. The following temperature dependence was obtained for the diffusion coefficient for Mo self-diffusion: $D = 4 \exp(-115{,}000/RT)$ cm^2/sec. For diffusion of W in Mo it was found that $D = 5 \cdot 10^{-4} \exp(-78{,}000/RT)$ cm^2/sec.

[Abstracter's note: Complete translation]

A. Rusakov

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28552
S/137/61/000/009/027/087
AC60/A101

18.7500

AUTHORS: Gruzin, P.L., Fedorov, G.B.

TITLE: Diffusion in heat-resistant cobalt-base alloys

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no.9, 1961, 3-4, abstract 9Zh17 (V sb. "Metallurgiya i metalloved. chist. metallov", no. 1, Moscow, 1959, 219 - 223)

TEXT: The diffusion of Co-Cu-W-Mo alloy BK 36 (VK36) under deformation was studied. The diffusion of both the elements entering in the base of the alloy (Co) and of those used for heat-proofing (C and Mo) was investigated. To investigate the influence of C and Mo upon the diffusion constant, an alloy with a minimum C content (0.025%) was prepared, and also a similar alloy without Mo. After casting the alloys were subjected to a preliminary compression to break down the dendritic structure. Diffusion annealing in H_2 at 1,100°C for 50 hrs was then carried out. Thereupon the ingots were forged into bars from which the specimens were prepared. Before the diffusion annealing a thin layer of the radioactive element (Co^{60}, Cr^{51}, W^{185}) was applied to one of the sides of the specimen. Diffusion annealing proceeded at 850-1,250°C in a tubular furnace. The diffusion co-

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Diffusion in heat-resistant cobalt-base alloys

efficients were measured by determining the total activity of the remaining portion of the sample after parallel layers were removed from it. The study of Co self-diffusion in the alloys investigated has shown that an addition of C reduces somewhat the activation energy and increases the self-diffusion coefficient. The admixture of Mo raises the activation energy and reduces the self-diffusion coefficient of Co. The increased tendency towards carbide formation determines the highest activation energy of Cr in an alloy with the maximum Cr content. Thus, the presence of Cr in these alloys raises the activation energy somewhat and reduces the diffusion coefficient of Cr. The retardation of Cr diffusion is the essential factor improving the heat-resistance properties of the VK36 alloy.

A. Rusakov

[Abstracter's note: Complete translation]

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FEDOROV, G. B.

21 (0), 24 (0)
AUTHOR: Tyagunov, G. A. SOV/89-7-2-18/24

TITLE: Scientific Conference of the MIFI (Nauchnaya konferentsiya MIFI)

PERIODICAL: Atomnaya energiya, 1959, Vol 7, Nr 2, pp 176-177 (USSR)

ABSTRACT: The yearly scientific meeting was held from 17 April to 15 May 1959 in the Moskovskiy inzhenerno-fizicheskiy institut (Moscow Physical Engineering Institute). More than 600 participants from 100 different institutes attended the 2 plenary and 18 sectional-conferences. A total of 148 lectures were held. The following lectures are specially mentioned: N. K. Romanovskiy on the thermo-nuclear examinations, N. G. Basov on the physical foundations of molecular generators and amplifiers, A. I. Leypunskiy on the construction of a fast reactor, I. Ya. Pomeranchuk on the theory of the peripheral collision of mesons and nucleons, A. B. Migdal on superfluidity and momentum of inertia of the nuclei, A. S. Kompaneyets on the strong electromagnetic gravity wave, V. I. Gol'danskiy on levels which are excited within the nucleus shell and methods of comprehending them, I. L. Rozental' and L. A. Prokhorova on the analysis of the possible experiments for the determination of the measurements of the μ-mesons, I. I. Dianov-Klokov on the spectrum of liquid and crystalline hydrogen under pressure (8000-10000 atm) and an instrument for measuring the absorption curves, I. I. Lyapidevskiy and G. V. Glazardina on new application possibilities of the diffusion chamber, A. V. Shal'nov on calculation methods for linear electron accelerators with migratory waves, P. A. Ryazin, A. B. Kingerrin and A. I. Zaboyev on new theories of the electron capture under betatron conditions of the acceleration, Ya. G. Pratnov on optimum wave length for a generator, V. P. Lomnev and G. A. Tyagunov on magnetic focusing in a linear electron accelerator, O. A. Val'dner, P. A. Dmitrovskiy, D. V. Karin, Yu. V. Mixin on the 3 new linear accelerators of the MIFI, and V. V. Kuznetskiy, O. A. Val'dner, V. V. Kotov and V. K. Chesnokov on examination of the electron movement in the system of the elutron with consideration of the scattering fields, O. A. Krayev on impulse method for measuring the heat conduction capacity of liquids and the theory of this method, Ya. V. Khabakhpashev, Yu. K. Il'in and D. A. Chirov on heat transmission to the eutectic Na-K which flows in a circular space, I. I. Petrovichev on heat transmission to circulating mercury, Y. M. Roysin on special conditions when working with a flat triode in the impulse technique, O. S. Pofurayev on calculation methods and construction of an impulse transformer for instruments with semi-conductor elements, Ya. A. Khetagurov on a possibility judge the characteristics of magnetic recording of impulses, B. I. Kal'nin on the element system for a universal digital computer, V. S. Malov on multiple control of the parameters of technologic processes, P. I. Popov on analysis of several systems with which physical energy apparatus can be automatically started, Yu. I. Topcharov on a method to examine the quality of a reactor control when the reactivity changes stepwise or linearily. G. A. Leont'yev and A. I. Yevstyukhin on examination of the iodine method of refining niobium and characteristics of the metal obtained, P. L. Gruzin and G. G. Ryabova on examination of the micro-distribution of carbon, tungsten, iron and other elements in zirconium and its alloys by use of auto-radiography, G. B. Fedorov on determination of the sublimation heat of zirconium and [illegible] by using radioactive indicators and G. B. Fedorov and A. K. Gemenikhin on determination of the diffusion coefficients of chromium, nickel, iron and chromium nickel steels. The literature for all these lectures will be published by the MIFI in a symposium.

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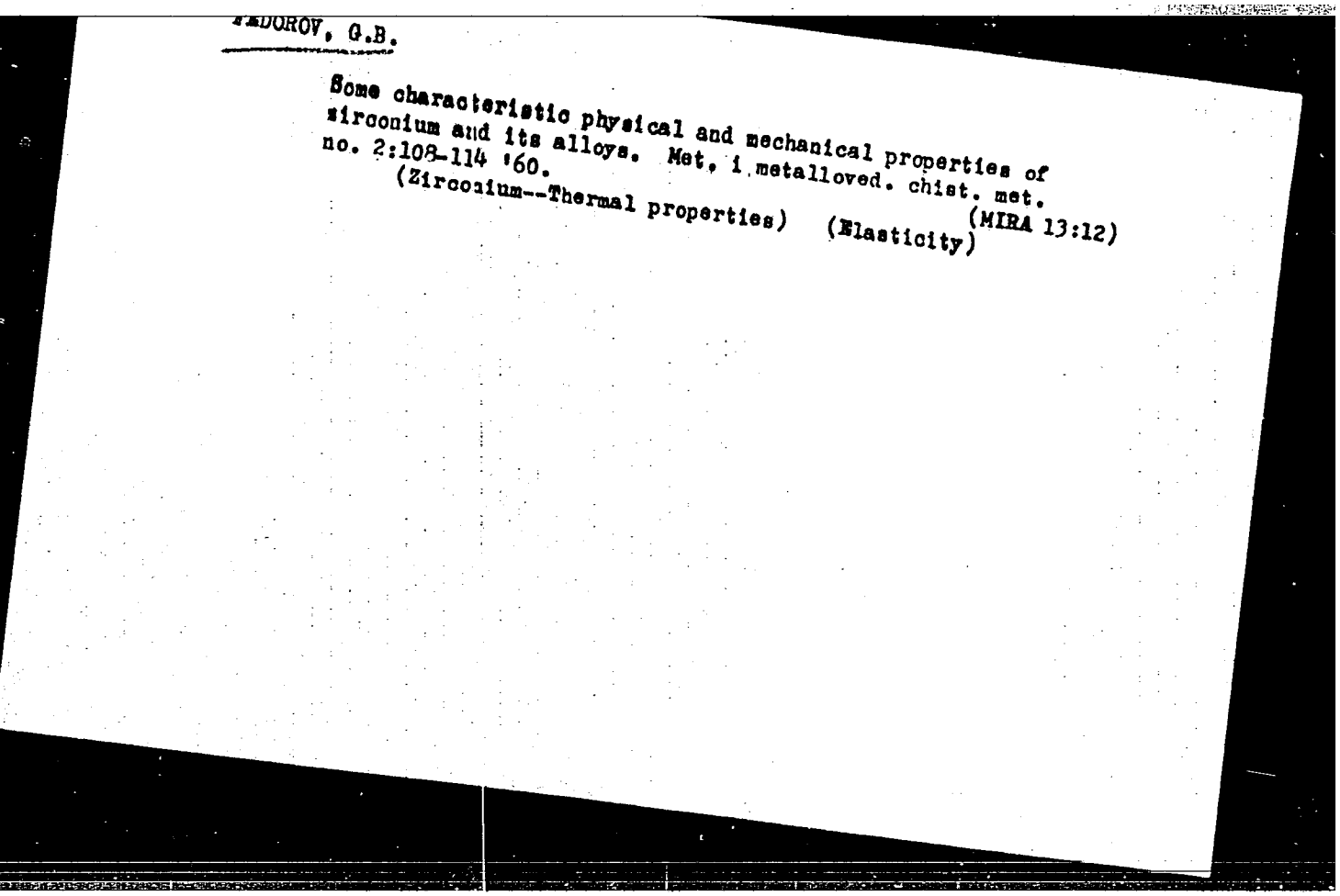

FEDOROV, G.B.

Some characteristic physical and mechanical properties of zirconium and its alloys. Met. i metalloved. chist. met. no. 2:108-114 '60. (MIRA 13:12)
(Zirconium--Thermal properties) (Elasticity)

FEDOROV, G.B.; Prinimali uchastiye: VASIL'YEV, E.A. i DEMIDOV, S.A.

Determining the heat of sublimation of silver, nickel, and zirconium by means of radioactive tracers. Met. i metalloved. chist. met. no. 2:141-147 '60. (MIRA 13:12)
(Heat of sublimation) (Radioisotopes--Industrial applications)

FEDOROV, G.B.; SEMENIKHIN, A.N.

Effect of alloying on the diffusion of elements in chromium-nickel steels. Met. i metalloved. chist. met. no. 2:252-258 '60. (MIRA 13:12)

(Chromium-nickel steel--Metallography)

FEDOROV, G.B.; BABIKOVA, Yu.F.; GRUZIN, P.L.; ZHOMOV, F.I.; RYABOVA, G.G.

Radioactive-tracer techniques in the study of the mobility, interatomic interaction, and distribution of elements in zirconium and its alloys. Izv.vys.ucheb.zav.;khim. i khim.tekh. 3 no.3: 395-401 '60. (MIRA 14:9)

1. Moskovskiy inzhenerno-fizicheskiy institut, kafedra metallurgii i metallovedeniya.
(Zirconium alloys) (Radioactive tracers)

18.7000,21.1200

77220
SOV/89-8-1-14/29

AUTHORS: Gruzin, P. L., Ryabova, G. G., Fedorov, G. B.

TITLE: Iron Distribution in Microvolumes of Zirconium Alloys. Letter to the Editor

PERIODICAL: Atomnaya energiya, 1960, Vol 8, Nr 1, pp 58-59 (USSR)

ABSTRACT: The use of zirconium in nuclear power reactors is very much reduced because of its poor strength and stability against corrosion. Although it is a well established fact that small impurities of different elements can decrease or increase its stability, little is known about the mechanism of these influences. Investigation of element distributions in alloys could, therefore, be very helpful, and the authors undertook to study the distribution of iron, which causes an extreme reduction of stability against corrosion especially in iodine containing zirconium. They used zirconium alloy with 0.15 weight

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Iron Distribution in Microvolumes of Zirconium Alloys. Letter to the Editor

77220
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% of iron and zircalloy type alloys (on the iodine zirconium basis) containing (in weight %): 1.1 lead, 0.1 iron, 0.1 chromium, and 0.05 nickel, and investigated the distribution of iron by means of contact autoradiography. Powdered radioactive isotope Fe^{59} was introduced into the alloy melted by means of an arc in the atmosphere of argon. Selfradiograms were taken on the MR type NIKFI plates by means of the 1.295 mev γ-ray and the 0.46 mev γ-ray of Fe^{59}. To insure sufficient resolution, sample thickness was of the order of a few tenths of a micron, which supplied a 5 to 10,000 imp/min·cm^2 intensity of radiation. Exposure time depended on the particular setup. The authors found that the iron distribution in the cast zirconium alloy was nonhomogeneous even after various thermomechanical treatments. Largest part of the iron remains concentrated on the boundaries between blocks obtained during the $\beta \rightarrow \alpha$ phase transition, and another part remains in the solid solution having not enough

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time to separate out of the alloy during its fast cooling. Similar iron distribution was recorded in cast zircalloy-2. A cold 5-10% deformation preserves almost the same picture as in cast alloys. Annealing of cold deformed alloys achieves a transfer of iron from solid solution to the α-phase boundaries. Forging hot alloys in air at temperatures between 850 and 750° C results in a strong granulation of their structure but the iron inhomogeneity remains. Thermal treatments of cast and hot-forged alloys occurred inside quartz tubing evacuated to approximately 10^{-4} mm Hg. Tempering the alloys from various temperatures from β-regions, the iron distributions stayed similar to those in cast alloys. This follows from the fact, pointed out by Hayes and others, that at high temperatures (in the β region) iron is in solid solution and fast cooling leads only to its partial separation on the boundaries developed during the $\beta \rightarrow \alpha$ transition. Slow cooling in ovens from the

β-region temperatures leads to a more complete separation of iron along the boundaries and sub-boundaries of the α-phase. A sample of cast, unforged zirconium-iron alloy tempered at its eutectoid temperature of 800° C showed almost complete separation of iron from the solution in the form of the intermetallide $ZrFe_2$ distributed along the boundaries and inside the grains of the α-phase of zirconium. Annealing zirconium-iron alloy in the α-region at 600° C (20 h) and 500° C (40 h) after tempering at 1200 and 900° C preserved the inhomogeneity of the iron distribution. In zircalloy-2 the redistribution of iron proceeds at a slower rate then in pure zirconium. This is probably due to the presence of other elements with a distribution pattern similar to that of iron according to preliminary data. One can assume that the higher resistance to corrosion of the zircalloy group compared with zirconium-lead alloys is due to the fact that lead distributes uniformly in zirconium, increasing

thereby the resistivity of the solid solution (representing the basis of the alloy), while Fe, Cr, and Ni concentrate on the boundaries of grains and blocks, slowing down the corrosion at the boundaries. There are 8 figures; and 7 references, 5 Soviet, 2 U.S. The U.S. references are: B. Lustman, F. Kerze, The Metallurgy of Zirconium, London, McGraw-Hill Book Co., 1955, p 608; E. Hayes, A. Roberson, W. O'Brien, Trans. Amer. Soc. Metals, 43, 888 (1951).

SUBMITTED: August 5, 1959

PANCHENKO, A.M.; FEDOROV, G.B.

"Atoms for peace" pavillion at the Industrial Exhibition of the U.S.S.R. in Iraq. Atom.energ. 9 no.1:63-64 Jl '60. (MIRA 13:7)
(Atomic energy--Exhibitions)

S/755/61/000/003/004/027

AUTHORS: Fedorov, G.B., Smirnov, Ye.A.

TITLE: Measurement of the partial vapor pressure of zirconium in its alloys with tin. Thermodynamic characteristics of zirconium and its alloys.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chistykh metallov. no.3. 1961, 34-42.

TEXT: The saturation vapor pressure of Zr was measured and several thermodynamic characteristics of Zr and its Sn alloys were calculated therefrom. The differential version of M. Knudsen's effusion method (The Kinetic Theory of Gases. London. 1934) was employed. The equipment used was described in the senior author's paper in no.2 of the subject sbornik, Atomizdat, 1960, 141. The test substance was placed in a Mo crucible heated in a resistance furnace and evaporated into a high vacuum through an aperture. Condensation of the particles of the atomic beam was accomplished on cooled traps. Weight determination was done by the radiochemical method, using radioactive Zr^{95}. Four alloys were tested: Pure Zr, and Zr with 1.5, 6, and 10% Sn, with 20% of the Zr in each alloy made up of the radioactive isotope. The temperature-pressure relationships for two aperture diameters were obtained from the experimental data by means of the least-square method, whereupon the Rossman-Yarwood formula (J. Chem. Phys., v.21, 1953, 1406) yielded the equation for the saturation vapor pressure of Zr: $\lg p = 1.58 - 1.28 \cdot 10^4 \cdot 1/T$. From the slope of the straight line thus determined the heat of sublimation L is obtained. The

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enthalpy and entropy are determined from the Landau-Lifshits expression for the chemical potential of a monoatomic ideal gas (Statisticheskaya fizika. Gostekhizdat. 1951). Equating the chemical potential of a monoatomic gas to the chemical potential of solid Zr, expressions are found for the determination of the enthalpy and the entropy per g·at.Zr. The partial vapor pressure of Zr in its Sn alloys was also determined (tabulated and graphed). From these partial-pressure data the thermodynamic activity of Zr, a_{Zr}, was found from the ratio p_{Zr} of a given alloy to the p^0_{Zr} of pure Zr (all referred to a 1.4-mm-diam effusion aperture). The results are graphed for 1,300° and 1,400°C vs. Zr content in each alloy. From the activity values thus obtained the changes of the partial thermodynamic functions (free energy, entropy, and enthalpy) of Zr in its Sn alloys are analytically obtained (expressions provided). The data obtained here yield a heat of sublimation that agrees fairly well with those of Zwikker (Physika, Nederland, v.8, 1928, 241). With respect to entropy and enthalpy, best agreement is obtained with respect to Zwikker's work also. The changes in the heat of sublimation (HS) of Zr in Sn alloys suggest the deduction that the addition of Sn increases the coupling energy of the atoms of the crystalline lattice. The effect of the quantity of Sn added on the increase in HS is analogous to its effect on the activation energy of Zr selfdiffusion per Fedorov, G. V., Gulyakin, V. D. (in no.1 of the same sbornik, 1959, 170). There are 4 figures, 5 tables, and 16 references (9 Russian-language Soviet, 7 English-language).

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

S/755/61/000/003/005/027

AUTHORS: Fedorov, G. B., Zhomov, F. I.

TITLE: Selfdiffusion of zirconium in the β-phase of the alloy Zircalloy-2.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chistykh metallov. no.3. 1961, 43-45.

TEXT: The paper reports an experimental determination of the temperature (T) coefficient of the selfdiffusion of Zr in the alloy Zircalloy-2 which affords better corrosional & mechanical properties than pure Zr. The alloy was fused from iodide Zr rods with (by weight) 1.5% Sn, 0.12% Fe, 0.05% Cr, and 0.05% Ni in an arc furnace in an atmosphere of purified Ar. Ingot uniformity was achieved by six remelts. The ingot was then hot-forged, the oxidized layer was milled off, and 9x10x18-mm specimens were cut. Radioactive Zr^{95} was sprayed onto one face in a vacuum. Paired specimens were then tied together with Mo wire, wrapped in Mo foil, and placed into a quartz tube continuously evacuated through a backing pump and a diffusion pump. The diffusion anneal was performed in a tubular furnace within a T range of 950-1,200°C over a period of several hrs. The magnitude of the diffusion coefficient was determined by layerwise integral radiometric analysis (see also no.1 of the subject sbornik, 1959, 162 and 170). The results are tabulated.

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Selfdiffusion of zirconium in the β-phase ... S/755/61/000/003/005/027

The diffusion coefficient of Zr with 1.5% Sn can be expressed by $D = 2.5 \cdot 10^{-3} \exp (37{,}000/RT)$, as against $D = 4 \cdot 10^{-5} \exp (26{,}000/RT)$ for pure Zr. It is readily seen that in Zircalloy-2 the activation energy of selfdiffusion is greater than in pure Zr and even slightly greater than in the binary Zr-Sn alloy. It is noted that, within the T interval investigated, the selfdiffusion coefficient of Zircalloy-2 decreases appreciably below that of pure Zr, but that it remains practically equal to that of the binary Zr-Sn alloy, at least within the limits of accuracy of the experiment. There are 1 figure, 1 table, and 4 Russian-language references (3 Soviet and 1 translation of "The Metallurgy of Zirconium," B. Lustman, F. Kerze, Jr., eds., McGraw-Hill, 1955. Moscow. "Foreign Lit. Publ. House. 1959).

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

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Card 2/3

FEDOROV, G.B.

S/137/62/000/001/006/237
A060/A101

AUTHORS: Gruzin, P.L., Babikova, Yu.P., Gerasimchuk, G.S., Lebedev, A.K., Rozhavskiy, G.S. Fedorov, G.B.

TITLE: The present state and future plans for the application of radioactive isotopes and nuclear radiations in metallurgy and mining industry

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 1, 1962, 6, abstract 1V42 (V sb. "Radioakt. izotopy i yadern. izlucheniya v nar. kh-ve SSSR, v. 3", Moscow, Gostoptekhizdat, 1961, 117 - 125)

TEXT: Radioactive isotopes are used at the Kuznetsk, Magnitogorsk, Donetskiy, Makeyevka plants, and also at "Azovstal'", the plant imeni Dzerzhinskiy, and others. The most promising directions of research are as follows: 1) the determination of the technological characteristics of steel smelting furnaces; 2) the study and control of the process of metal deformation; 3) the elaboration of special radiometric and activation methods for determining the degree of im-

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purity contamination of metals and semiconductors; 4) the study of the distribution of elements in diffusion microvolumes, of destruction processes, of loss of strength in metals, etc.

N. Yudina

[Abstracter's note: Complete translation]

S/755/61/000/003/019/027

AUTHORS: Fedorov, G.B., Zhomov, F.I.

TITLE: Diffusion of uranium in zirconium from uranium-molybdenum alloys.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chistykh metallov. no.3. 1961, 193-195.

TEXT: The paper surveys briefly the existing bibliography on the diffusion of U in Zr (Schwope, A., Jackson, Z., Report MI-T-24, June 1950) and on the effect of neutron radiation on the properties of alloys of U with 1-13.5% Mo (Konobeyevskiy, B.M., et al., in Trans. Internat'l Conf. on peaceful uses of atomic energy, Geneva, 1955, Izd-vo AN SSSR, 1955; Trans. 2d Internat'l Conf. etc., Geneva, 1958, v.3, Atomizdat, 1959; Atomnaya energiya, v.4, no.1, 1958, 34; ibid., no.2, 1956, 63; ibid., v.9, no.3, 1960, 194; Bleiberg, M., et al., J. Appl. Phys., v.27, no.11, 1956, 1270), and describes new experimentation on the diffusion of U in iodide Zr with small Hf content (<0.04%) from alloys with 3 and 9% Mo. Prior to diffusion anneal platelets of the U alloys were wedged firmly into the Zr specimens. The diffusion pairs thus obtained were wrapped in Mo foil and placed in evacuated quartz ampoules. Diffusion anneal was performed in tubular furnaces at 900-1,050°C (to ±5°) for up to 160 hrs. After anneal the Zr specimens were cut along the slot. Then, beginning at the contact surface, thin layers were successively removed, whereupon the integral

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α-activity of the remainder of the specimen is measured on the scintillation counter. Since the counter records the α-radiation of a very thin surficial layer only, the integral activity of the specimen can be regarded as proportional to the specific radioactivity or the concentration of the U at the depth of the layer previously removed. The source is assumed to be constant. Assuming the variation of the source concentration with depth to be known, an error-function equation (provided) is used to determine the diffusion coefficients (DC) of the U at various depths. It was established that for the initial portions of the concentration curve the DC are practically independent of depth and, hence, of concentration. The values of the DC of U from the two U-Mo alloys tested are tabulated and their T dependence is graphed. The activation-energy values and the pre-exponent factors are also tabulated. The Schwope-Jackson data are also shown for comparison. It is readily seen that the presence of Mo impairs the diffusion of U atoms in Zr, reduces the DC and increases the diffusional activation energy. The present test results suggest that, since the U diffusion is accompanied by Mo diffusion in the Zr, the Mo-produced hardening of the Zr may impair the U diffusion. There are 1 figure, 2 tables, and 11 references (8 Russian-language Soviet, 1 Russian translation of a presumably English-language original, and 2 English-language U.S.).

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

S/755/61/000/003/021/027

AUTHORS: Fedorov, G.B., Rayetskiy, V.M., Smirnov, Ye.A.

TITLE: Diffusional and thermodynamic characteristics of nickel.

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chistykh metallov. no.3. 1961, 203-209.

TEXT: The paper reports on the first part of an investigation concerned with the diffusional and thermodynamic characteristics of Ni and its alloys. Its especial objective are the properties of pure Ni. Artificial radioactive Ni^{63} was utilized in all experiments. The radioactivity was measured by means of an end-window counter with a 1 mg/cm^2 mica window. In addition to the soft β-radiation of the Ni^{63} isotope a harder β-radiation of about 0.5 Mev was detected. The 70-day half-life of the second isotope identified it as Co^{58}. A method was developed to perform the simultaneous but separate determination of the diffusion coefficients (DC) of the metals emanating β-radiation of differing energy. The specimens were measured twice: Once without filter and again with an Al filter, for which the -absorption coefficients had been found to be $\mu_{Ni} = 2,300$, $\mu_{Co} = 100\ cm^{-1}$. The Al filter selected had a thickness $h = 0.01$ mm, which is 3x thicker than a 50%-absorption layer, but 0.4x as thick as the layer of total absorption of Ni radiation. This filter reduced the Co radiation by no more than 10%. The two integral-flux equations

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yield the numerical values for the two unknown I_{Ni} and I_{Co} fluxes upon substitution of μ_{Ni}, μ_{Co}, and h therein. The diffusion specimens were made of electrolytical Ni, 99.9% pure, remelted in an induction furnace and forged. The milled and ground specimens were 25x8x8 mm in size. The radioactive Ni^{63} was vacuum-sprayed onto one face. Activity: 5,000 pulses/min. The paired specimens were tied together and placed in Ar-filled quartz ampoules. Anneals in tubular furnaces at 900-1,250°C lasted from 16.5 to 400 hrs. Measurements of the radioactivity were performed by the layerwise-removal integral-radioactivity method of (cf. Gruzin, P. L., et al., Fizika metallov i metallovedeniye, v.IV, no.1, Moscow, 1957). The concentration of the soft β-radiation of the Ni was assumed to be proportional to the integral radioactivity. The specific radioactivity of the Co was determined from the integral radioactivity, its depthwise gradient in the diffusion layer, and the β-radiation absorption coefficient of Co in Ni. The self-DC of Ni is found to be $D_{Ni} = 1.0 \exp(-66,700/RT)$ $cm^2 \cdot sec^{-1}$, the Co-in-Ni DC $D_{Co} =$ $1.4 \exp(-66,200/RT)$ $cm^2 \cdot sec^{-1}$. These findings are compared briefly with those of R. E. Hoffman, et al., J. Metals, v.8, 1956, 5, and J. R. MacEwan, et al., Canad. J. Chem., v.37, 1959, 10. The vapor pressure of Ni was measured by Knudsen's method, using radioactive Ni^{63}. Equipment and methods used have been described by the senior author alone and by the senior and junior author, respectively, in

no.2 of the present sbornik, Atomizdat, 1960. Ni^{63} shavings were remelted in an arc furnace. Radioactivity of the preparation: 1.6 μ-curie; Ni^{63} content in the alloy: 44%. A specified-weight sample was dissolved in diluted HNO_3. The vapor pressures were measured with an effusion orifice having an area of $1.08 \cdot 10^{-2}$ cm^2. Least-square analysis yielded the equation $\log p = 9.581 - 2.033 \cdot 10^4 \frac{1}{T}$ within the 1,201-1,444°C range. The heat of sublimation, enthalpy, and entropy of solid Ni were calculated by the method outlined in the above-cited 1960 paper by the senior and the junior author (p.34 of the 1960 sbornik). It is noted that the selfdiffusion-activation energy of Ni divided by its heat of sublimation yields a ratio of 0.7, which is characteristic of metals with a face-centered cubic lattice. There are 2 figures, 4 tables, and 15 references (10 Russian-language Soviet, 5 English-language).

ASSOCIATION: MIFI (Moscow Engineering Physics Institute).

FEDOROV, G.B.

Value of zirconium self-diffusion parameters. Met. i metalloved. chist. met. no. 4:34-40 '63. (MIRA 17:5)

ACCESSION NR: AT4005960 S/2755/63/000/004/0064/0068

AUTHOR: Fedorov, G. B.; Zhomov, F. I.

TITLE: Diffusion penetration of uranium into molybdenum from a uranium-niobium-zirconium alloy

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chisty*kh metallov, no. 4, 1963, 64-68

TOPIC TAGS: diffusion, uranium diffusion, uranium niobium zirconium alloy, niobium diffusion, zirconium diffusion, molybdenum diffusion, uranium diffusion coefficient, uranium molybdenum diffusion

ABSTRACT: Uranium, columbium (niobium), and zirconium ternary alloys having a γ-phase structure are of great interest and have been proposed as alloys that resist gas swelling at elevated temperatures. Specifically, a uranium alloy with 20% Cb and 5% Zr has been reported to preserve its hardness up to 900C. In the present paper, the interaction of molybdenum with a uranium alloy containing 25% Cb and 5% Zr was studied. An annealing temperature of 900-1200C was applied in a neutral atmosphere at 200-300 mm Hg over periods of time varying from tens to hundreds of hours depending on the temperature. During diffusion-annealing, a greyish-yellow skin formed at the interface of the specimens.

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ACCESSION NR: AT4005960

A radiometric analysis was made, and a graph plotted showing the variation of uranium radioactivity in diffusion layers at various depths, as shown in Figure 1 of the Enclosure. From the formation of a skin at the interface and from the saddle in the radiometric curve in Fig. 1, it was concluded that a reactive diffusion took place and a new phase developed at the interface. Furthermore, as a result of analysis of binary systems, it was assumed that the new phase was $ZrMo_2$. This assumption was further confirmed by X-ray analysis. The diffusion kinetics were explained as follows: what initially takes place is a mutual atomic diffusion of uranium, columbium, and zirconium into molybdenum and a diffusion of molybdenum into the uranium alloy. At this stage zirconium atoms are stored in molybdenum, and molybdenum atoms in the uranium alloy, while the path is free for uranium diffusion. After the formation of the intermetallic phase, a reactive diffusion sets in, and uranium begins to be expelled from this phase. Simultaneous with the growth of the intermetallic phase, the diffusion of uranium into molybdenum is accelerated. Uranium diffusion coefficients were determined by Matano's method (Matano. Japan. J. Phys., 8, 109 (1933)). However, this method is applicable only to atomic diffusion; therefore, the computed diffusion coefficients in Fig. 1 of the Enclosure are called conditional and can be used for estimating purposes only. The temperature dependence of the conditional diffusion coefficients of uranium diffusion from the uranium alloy into molybdenum is given. It was found that the activation energy for diffusion of uranium from the alloy into molybdenum is about the same as for diffusion of uranium into zirconium. However, uranium diffuses into

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ACCESSION NR: AT4005960

molybdenum at a slower rate. The obtained coefficients of diffusion are comparable to those of uranium diffusing from uranium-molybdenum alloys into zirconium. Diffusion of uranium from its alloy with zirconium and columbium into molybdenum occurs in the studied range of temperatures at a rate about 1000 times slower than the autodiffusion of uranium, but about 10⁸ times faster than the autodiffusion of molybdenum. Test specimens were also diffusion-annealed at a temperature of 1300C for 9 hours. A partial fusion of the materials was observed at the interface. "Engineer I. D. Rastanayer took part in the work." Orig. art has: 4 figures.

ASSOCIATION: Inzhenerno-fizicheskiy institut, Moscow. (Engineering-Physics Institute).

SUBMITTED: 00 DATE ACQ: 17Jan64 ENCL: 01

SUB CODE: MM, MT NO REF SOV: 006 OTHER: 002

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ACCESSION NR: AT4005963 S/2755/63/000/004/0110/0121

AUTHOR: Fedorov, G. B.; Smirnov, Ye. A.; Zhomov, F. I.

TITLE: Diffusion and thermodynamic properties of nickel-chromium alloys

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chisty*kh metallov, no. 4, 1963, 110-121

TOPIC TAGS: nickel chromium alloy, nickel diffusion, chromium diffusion, thermodynamic property, nickel vapor pressure, chromium vapor pressure, activation energy, thermodynamic factor, tagged atom method

ABSTRACT: In a continuation of earlier work, radioactive Cr^{51} and Ni^{63} were employed in an investigation of the diffusion characteristics and thermodynamic properties of binary nickel-chromium alloys with 4.9 - 19.7 wt. % Cr. For temperatures up to 950-1150C, the authors report an increase in the activation energy of diffusion of chromium with a decrease in that of nickel, along with a decrease in the diffusion coefficients of chromium and an increase in the diffusion coefficients of nickel, due to admitture of Cr. The thermodynamic properties of nickel in the Ni-Cr alloys were studied by vapor pressure

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ACCESSION NR: AT4005963

determinations in a modification of Knudsen's radioactive method; there was, however, an abnormality in the isothermic curves: at 1200 and 1300C the vapor pressure of nickel above alloys with Cr concentrations up to 30 at. % was found to be higher than that of pure nickel. This anomaly could be explained by the kinetics of evaporation. For Ni-Cr alloys at 750C, the coefficient of heterodiffusion decreases as the at. % chromium increases, and the activation energy of heterodiffusion passes through a maximum at a Cr concentration of 24 at. %. "Engineers V. N. Zagryazkin and I. P. Kursevich took part in the work." Orig. art. has: 3 tables and 11 graphs.

ASSOCIATION: Inzhenerno-fizicheskiy institut, Moscow (Institute of Engineering Physics)

SUBMITTED: 00 DATE ACQ: 17Jan64 ENCL: 00

SUB CODE: MM NO REF SOV: 008 OTHER: 005

Card 2/2

GRUZIN, P.L.; FEDOROV, G.B.; RYABOVA, G.G.; DANILKIN, Ye.A.

Studying the corrosion of metals and alloys by radioactive tracers. Met. i metalloved. chist. met. no. 4:198-206 '63. (MIRA 17:5)

DANILKIN, Ye.A.; FEDOROV, G.B.; RYABOVA, G.G.

Methods of quantitative autoradiography. Met. i metalloved. chist. met. no. 4:207-208 '63. (MIRA 17:5)

BR

ACCESSION NR: AT4013927 S/2659/63/010/000/0046/0052

AUTHOR: Fedorov, G. B.

TITLE: Some characteristics of the strength and diffusion properties of zirconium

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya po zharoprochny*m splavam, v. 10, 1963, 46-52

TOPIC TAGS: zirconium, zirconium strength, zirconium diffusion, zirconium mechanical property, autodiffusion, zirconium tin alloy

ABSTRACT: Several articles have been published on autodiffusion in Zr and Zr alloys. In these, however, the values for the activation energy of autodiffusion vary significantly. This activation energy is known to be only about two thirds of the heat of sublimation. In the author's studies, to prevent $\beta \rightarrow \alpha$ transformation in Zr, he preheated the specimen at 1200C for 30 minutes. These tests showed that stabilization of the initial Zr is the reason for the difference in autodiffusion parameters. Further tests with preheating of the Zr samples to 1450C resulted in a Zr structure of even higher stability. It was found that the activation energy of Zr autodiffusion is 40 Cal/g·atom. Figure 1 in the Enclosure shows the effect of structural stabilization on β-Zr autodiffusion. The investigations showed that alloying with tin increases the activation energy of autodiffusion

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and the heat of sublimation, and counteracts the usual decrease in the modulus of elasticity as the temperature rises. Thus, alloying with tin improves the strength of Zr at high temperatures. It is possible that this is connected with the significant lowering of the excessive vacancy concentration. Analysis of the experiments yielded the following equations for the relationship between temperature and the stabilized zirconium autodiffusion coefficients:

for α-Zr, $D = 10^{-5} \cdot \exp(-40000/RT)$,

for β-Zr, $D = 2 \cdot 10^{-4} \cdot \exp(-40000/RT)$.

Since, in the nonstabilized condition, zirconium has a large number of defects, the author suggests that there is annular diffusion in zirconium which is somewhat complicated due to the large number of vacancies in the nonstabilized metal. Orig. art. has: 1 figure and 2 tables.

ASSOCIATION: Institut metallurgii AN SSSR (Institute of Metallurgy, AN SSSR)

SUBMITTED: 00 DATE ACQ: 27Feb64 ENCL: 01

SUB CODE: ML NO REF SOV: 016 OTHER: 007

Card 2/3

FEDOROV, G. B.; SALMANOVICH, M. Ya.

"Etnicheskaya i kul'turnaya istoriya naseleniya Yugozapada SSSR ot nachala zheleznogo veka do XIX stoletiya."

report submitted for 7th Intl Cong, Anthropological & Ethnological Sciences, Moscow, 3-10 Aug 64.

L 09510-67 EWT(m)/EWP(t)/ETI IJP(c) JD

ACC NR: AT6023738 (A,N) SOURCE CODE: UR/2755/66/000/005/0092/0098

30
B+1

AUTHOR: Fodorov, G. B.; Smirnov, Yo. A.; Zhomov, F. I.

ORG: none

TITLE: Autodiffusion in alpha uranium

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniya chistykh metallov, no. 5, 1966, 92-98

TOPIC TAGS: metal diffusion, uranium

ABSTRACT: Polycrystalline samples of electrolytic uranium with a purity of 99.87% were used in the tests. The samples were in the form of cylinders 10-12 mm in diameter and 6-8 mm high. Before the diffusion study, the samples were placed in evacuated and sealed quartz ampoules, and were subjected to water quenching from 800°C and stabilizing annealing for 4 hours at 630°C. Radioactive uranium, enriched up to 90% in the U^{235} isotope, was used as an indicator in the diffusion tests. A rod of enriched uranium was suspended in a tungsten heater and was sprayed in a vacuum onto the end surfaces of the samples, which had been specially prepared by polishing. The samples were then placed in quartz ampoules which were evacuated to a pressure of 10^{-5} mm Hg and sealed. Diffusion annealing was carried out at emperatures of 630, 590, 550, and 500°C for 434, 1455, 1827, and 1835 hours, respectively. After the

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diffusion annealing, the samples were subjected to a layer-wise radiographic analysis. The depth of penetration of the active material into the samples was found to be only 10-20 microns. On the basis of the experimental data, calculations were made of the coefficients of autodiffusion for alpha uranium. A curve shows the dependence of these coefficients on temperature. Overall conclusions were as follows: 1) at the temperatures at which the alpha phase of uranium exists, autodiffusion proceeds predominantly along the intergrain boundaries; 2) measurements were made of the coefficients of boundary and volumetric autodiffusion of uranium in the alpha phase. It was established that the level of diffusion mobility along the grain boundaries is considerably (by 4-5 orders of magnitude) greater than volumetric diffusion. The temperature dependences of the autodiffusion coefficients have the following form:

$D_{vol} = 4.5 \times 10^{-4} \exp(-42{,}200/RT)$ cm^3/sec,

$D_{bound} = 1.6 \times 10^{5} \exp(-44{,}300/RT)$ cm^3/sec.

Orig. art. has: 4 figures and 2 tables.

SUB CODE: 11, 20/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 004

Card 2/2 LC

EWP(e)/EWT(m) WW/WH

ACC NR: AT6023739 SOURCE CODE: UR/2755/66/000/005/0099/0104

AUTHOR: Yevstyukhin, A. I. (Doctor of technical sciences); Fedorov, G. B.; Solov'yev, G. I.; Smirnov, Yo. A.; Zhomov, F. I.; Zaluzhnyy, A. G.

ORG: none

TITLE: Study of the structural diagram of uranium carbide-tungsten alloys, and the diffusion of uranium from its monocarbide into tungsten

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Metallurgiya i metallovedeniye chistykh metallov, no. 5, 1966, 99-104

TOPIC TAGS: metal diffusion, uranium compound, tungsten metal

ABSTRACT: In the present article the structural diagram of uranium carbide-tungsten alloys was studied by determination of the temperature of the start of melting of the alloys, and by X ray and metallographic analyses. The alloys were prepared by briquetting uranium carbide and tungsten powders at a pressure of about 5×10^3 kg/cm, with subsequent sintering in a furnace with a graphite heater at 2000°C and a pressure of 1×10^{-4} mm Hg, and then melting in a Type MIFE-9-3 arc furnace. Starting materials were technical grade uranium with a purity of 99.87 wt%, and spectroscopically pure graphite in the form of rods 5 mm in diameter. A table shows the compositions of the starting alloys. The tungsten content varied from 1 to

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L 09419-67

ACC NR: AT6023739

90 wt%. The temperature of the start of melting of the alloys was determined directly with an optical pyrometer. The X ray analysis was made by the Debye method in a Type RKU-86 cylindrical chamber. A structural diagram was constructed, based on the experimental results. It was found that the melting temperature of the eutectic was 2180 ± 20°C. The eutectic point corresponded to 10 wt% tungsten. The solubility of tungsten at the melting temperature of the eutectic was determined to be about 8 wt%. The solubility of tungsten at a temperature of 2000°C was about 4 wt%. Solubility of uranium monocarbide in tungsten was not observed. A study was made of the diffusion of uranium from its monocarbide in tungsten in the temperature interval of 1500-2100°C. The temperature dependence of the diffusion coefficients had the form

$$D = 0.11 \times \exp(-91{,}700/RT)\ cm^2/sec.$$

In the temperature interval studied, there was no reaction between uranium carbide and tungsten. Orig. art. has: 5 figures and 2 tables.

SUB CODE: 11, 20/ SUBM DATE: none/ ORIG REF: 004/ OTH REF: 003

ACC NR: AP6032403 SOURCE CODE: UR/0089/66/021/003/0189/0192

AUTHOR: Fedorov, G. B.; Smirnov, Ye. A.

ORG: none

TITLE: Thermodynamic properties of the γ phase of the uranium-zirconium system

SOURCE: Atomnaya energiya, v. 21, no. 3, 1966, 189-192

TOPIC TAGS: uranium alloy, zirconium alloy, thermodynamic property, reactor fuel element, physical diffusion, electrochemistry, phase transition

ABSTRACT: In view of the fact that alloying with zirconium has been to increase the corrosion resistance and improve other mechanical properties of uranium fuel elements, the authors have investigated the thermodynamic and diffusion properties of uranium-zirconium alloys at temperatures above 750C, where the mutual solubility of these metals is unlimited. The thermodynamic properties were determined by measuring the emf of an electrochemical cell based on the reaction U (solid)| U^{+3} + (KCl-NaCl)| U — Zr (alloy). The preparation of the cell is described in detail. The emf was measured for 100 — 200 hours by a known method in the temperature interval 750 — 910C. The diffusion of the components in the uranium-zirconium system was investigated by tracing the radioactive isotopes U^{235} and Zr^{95} deposited on the surfaces of the samples. The radioactivity was recorded with scintillation counters. Tables of the emf,

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ACC NR: AP6032403

of the principal partial thermodynamic functions of the system, and of the diffusion coefficients are presented. Since the activities of two components showed a negative deviation from Raoult's law, it is deduced that the binding forces between the uranium and the zirconium atoms are stronger in the solid solution than the binding forces between like atoms. The existence of a δ phase is deduced from the fact that the maximum deviation of the integral thermodynamic functions for ideal occurs at concentrations 30 — 35 at.% of uranium. The results are compared with that by others. Orig. art. has: 5 figures, 3 formulas, and 3 tables.

SUB CODE: 11, 18, 20/ SUBM DATE: 01Feb66/ ORIG REF: 014/ OTH REF: 003

Card 2/2

ZAK, P.S.; FEDOROV, G.D., inzh., retsenzent; GROMAN, M.B., red.; DANILOV, L.N., red. izd-va; MAKAROVA, L.A., tekhn. red.

[Double enveloping worm gears]Globoidnaia peredacha. Moskva, Mashgiz, 1962. 255 p. (MIRA 16:1)
(Gearing, Worm)

ZABLONSKIY, K.I., kand. tekhn. nauk, dotsent; ZAK. P.S.; ZHITOMIRSKIY, B.Ye.; FEDOROV, G.D.

Standardization of globoid reducing worm gears. Nauch. zap. Od. politekh. inst. 39:16-26 '61 (MIRA 17:3)

Thin films of intermetallic compounds. A. K. Kikoin and G. D. Fedorov. *Doklady Akad. Nauk S.S.S.R.* 92, 1163–4 (1953). Mg_3Sb_2, which should be a dielectric, is difficult to prep. stoichiometrically by fusion. Mg_3Bi_2, prepd. by simultaneous evapn. of the components on a glass plate *in vacuo*, in films approx. 1000 A. thick exhibited a narrow transparent strip sharply bounded and lying perpendicular to a line between the evapn. sources. The position of the strip corresponded to Mg_3Bi_2 by geometric calcn. The light passing through the strip was 25.9% of that passing through the glass alone. Curves of transmittance vs. distance across the strip showed a slight min. near the middle of the peak. This usually disappeared within several days, but remained for 1.5 months in one case. Prolonged exposure of the films to air produced a widening of the transparent strip. The Mg side of the strip acquired a stable yellow-brown color (transmitted light). Mg-As, Ca-Bi, and Ca-As produced transparent strips that widened on exposure to the air; the opaque part of the films acquired a bright color (especially for Mg-As). R. D. Misch

FEDOROV, G. D.

FEDOROV, G. D. --"Semiconducting Properties of Magnesium-Bismuth Alloys." *(Dissertations for Degrees in Science and Engineering Defended at USSR Higher Educational Institutions) Ministry of Higher Education USSR, Ural State U imeni A. M. Gorkiy, Sverdlovsk, 1955

SO: Knizhnaya Letopis', No. 25, 18 Jun 55

* For the Degree of Doctor of Physicomathematical Sciences

137-58-6-13160

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 282 (USSR)

AUTHORS: Kikoin, A.K., Fedorov, G.D.

TITLE: Electric Conductivity of Mg-Bi Alloys (Elektroprovodnost' splavov sistemy Mg-Bi)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 72, pp 76-89

ABSTRACT: An investigation of the relationship between the resistance (R) of thin (1000-angstrom) films of Mg-Bi alloys and the composition; curves of log $1/R = f(1/T)$ were also obtained for a sample having a stoichiometric content of Mg_3Bi_2 (40 atom % Bi) and close to it. The film was made by Vekshinsky's technique of spraying onto a glass plate and was then cut into strips 1-1.5 mm wide. Each strip contained a concentration interval of $\sim$ 2 atom % Bi. 20-25 strips of each film were examined and measurements taken in a vacuum. Curves of the relationship of the R of Mg and Bi to the thickness of the film are adduced showing the thickness at which anomalies in R and its temperature relationship disappear. A sharp maximum of R was observed close to the Mg_3Bi_2 composition of the alloy, at which the film becomes transparent. During fractional

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137-58-6-13160

Electric Conductivity of Mg-Bi Alloys

evaporation of the metal, a maximum R appears after annealing at 230°C, but its magnitude is much lower. To establish the effect of air, measurements were taken with protective SiO coating on surface of alloys, but the character of curve did not change. The temperature relationship of R demonstrates that alloys covering a broad variety of compositions approaching Mg_3Bi_2 possess semiconductive properties and impurity conductivity. An evaluation of activation energy ($\sim$ 0.06 ev) was made.

L.M.

1. Bismuth--Magnesium films--Electrical properties 2. Thin films--Preparation

Card 2/2

137-58-6-13161

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 6, p 283 (USSR)

AUTHORS: Kikoin, A.K., Fedorov, G.D.

TITLE: Thermoelectromotive Forces in Mg-Bi Alloys (Termoelektrodvizhushchiye sily v splavakh sistemy Mg-Bi)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 72, pp 90-97

ABSTRACT: Thermoelectromotive forces E of alloys of Mg-Bi group were studied using specimens produced by Vekshinskiy's technique. E in relation to Cu was measured on films of variable composition. A coated glass plate was fastened on a special table, the displacement of which was controlled by a micrometric screw and was measured with an accuracy of up to 0.2 mm. Two Cu thermoprobes were lowered onto the plate surface. The pointed ends of the probes were semi-spheroidal in shape with $\sim$1 mm diam. A difference in temperature was produced between the probes by heaters consisting of nickel wire which was wound on the cylindrical part of the probe and insulated on the outside with water glass. E was measured by a PPTV-1 potentiometer to which were attached the Cu wires of a Cu-constantan thermocouple. It was established that E of pure

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137-58-6-13161

Thermoelectromotive Forces in Mg-Bi Alloys

Mg and Bi films having a thickness $l > 500$ angstrom does not depend on l and has the same value as for thick material. The Mg-Bi films studied had $l \sim 1000$ angstrom; therefore, it is assumed that thin-film effects should not play a significant role. In Mg-Bi alloys a sharply defined maximum of E was observed, which matches the maxima of resistance and transparency (ref. RzhMet, 1958, Nr 6, abstract 13160) and corresponds to the composition of Mg_3Bi_2. All this proves that Mg_3Bi_2 is an impurity semiconductor. There are anomalies in the behavior of E and in the curves of transparency and resistivity in the range of concentrations corresponding to 50 atom % Bi, which may be connected with the existence of an intermetallic compound MgBi. Bibliography: 13 references.

S.S.

1. Bismuth-Magnesium films--Electrical properties 2. Bismuth-Magnesium films --Temperature factors 3. Bismuth-Magnesium films--Test results

Card 2/2

SOV/137-59-1-779

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 1, p 104 (USSR)

AUTHOR: Fedorov, G. D.

TITLE: The Formation of a Barrier Layer Attained With the Aid of an Intermetallic Mg_3Bi_2 Compound (Obrazovaniye zapornogo sloya pri pomoshchi intermetallicheskogo soyedineniya Mg_3Bi_2)

PERIODICAL: Tr. Ural'skogo politekhn. in-ta, 1957, Nr 72, pp 98-104

ABSTRACT: A description of a series of experiments dealing with rectification phenomena in Mg-Bi films. It was established that a narrow zone containing an alloy of variable concentration is formed in the vicinity of a butt-type, resistance-welded joint between the Mg and Bi. This zone contains a fine layer of a Mg_3Bi_2 compound which serves as a chemical barrier layer.

B. V.

Card 1/1

AUTHORS: Fedorov, G.D., Zablonskiy, K.I. 32-24-4-55/67

TITLE: A Stand for Testing Pneumatic Machines and Auxiliary Shaft (Escape) Winches (Stendy dlya ispytaniya pnevmodvigateley i vspomogatel'nykh shakhtnykh lebedok)

PERIODICAL: Zavodskaya Laboratoriya, 1958, Vol. 24, Nr 4, pp. 494-495 (USSR)

ABSTRACT: For the purpose of testing pneumatic machines stress is exercised by means of a generator with electric braking, control is carried out by means of a rheostat, and capacity is determined by an ammeter and voltmeter. The degree of efficiency can be determined by periodic calibration of the generator. A mechanical consumption gauge of the type DP-280 determines air consumption, and a differential manometer DT-60 is used for periodical control. The resistance to wear of the rotor, the modifications of the degree of efficiency, and investigations of noise can be carried out. Also two types of stands for the testing of auxiliary shaft (escape) winches were developed in laboratories. The more simple of the two consists of a winch fastened upon the fundament, upon which a device used for exercising stress by means of a brake shoe is mounted; the latter retains a constant magnitude of stress. Stress

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A Stand for Testing Pneumatic Machines and Auxiliary Shaft (Escape) Winches

32-24-4-55/67

is controlled by means of a wattmeter with an automatic recording device. It is possible to test winches of the type LME . For the purpose of testing winches under working conditions a stand is used upon which there are two winches of the type MEL : the one serves as a test object, the other, in connection with the generator, as a stress component of the stand. By regulating the number of revolutions performed by the machine it is possible to change the number of cycles per minute. The latter are recorded by a counter, while for the determination of capacity and stress an ammeter and voltmeter are used. The stress capacity of the winch MELD -4,5 and the durability of the modernized type MELM - 4,5 were increased. A stand for the investigation of the gears of winches is also described.

ASSOCIATION: Odesskiy politekhnicheskiy institut i Odesskiy mashinostroitel'nyy zavod "Krasnaya Gvardiya" (Odessa Polytechnic Institute, and Odessa Machine Building Plant "Krasnaya Gvardiya")

Card 2/2 1. Pneumatic machinery--Test methods 2. Pneumatic machinery--Testing equipment 3. Hoists--Test methods 4. Hoists--Testing equipment

BUBLIKOV, Yevgeniy Vladimirovich, inzh.; VINARSKIY, Yerim Naumovich, inzh.; DANCHICH, Valeriy Valerianovich, inzh.; DOKUKIN, Oleg Semenovich, inzh.; LINKOV, Aleksandr Viktorovich, inzh.; TELEPNEV, Dmitriy Yakovlevich, inzh.; FEDOROV, Sergey Vasil'yevich, inzh.; FEDOROV, Georgiy Dmitriyevich, inzh.; YAKUSHIN, Nikolay Petrovich, kand.tekhn. nauk, inzh.; ZHADAYEV, V.G., otv.red.; SMIRNOV, L.V., red.izd-va; SABITOV, A., tekhn.red.

[Selection of equipment for vertical shaft sinking] Vygor oborudovaniia dlia prokhodki vertikal'nykh stvolov shakht. Moskva, Ugletekhizdat, 1959. 251 p. (MIRA 12:8)

1. Sotrudniki Ukrainskogo Nauchno-issledovatel'skogo instituta organizatsii i mekhanizatsii shakhtnogo stroitel'stva (UkrNIIOMShS) (for all except Zhadayev, Smirnov, Sabitov).
(Shaft sinking) (Mining machinery)

BUBLIKOV, Yevgeniy Vladimirovich, inzh.; DOKUKIN, Oleg Semenovich, inzh.; TELEPNEV, Dmitriy Yakovlevich, inzh.; FEDOROV, Georgiy Dmitriyevich, inzh.; FEDOROV, Sergey Vasil'yevich, inzh.; KOSTON'YAN, A.Ya., otv.red.; SABITOV, A., tekhn.red.

[Hoisting equipment in mine building] Pod"emnye ustanovki v shakhtnom stroitel'stve. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po gornomu delu, 1960. 258 p. (MIRA 13:5)

1. Ukrainskiy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva (UkrNIIOMShS) (for all, except Koston'yan, Sabitov).
(Mine hoisting--Equipment and supplies)

BUBLIKOV, Ye.V., inzh.; FEDOROV, G.D., inzh.

The PP-1 belt reloader. Ugol'.prom. no.4:70-72 Jl-Ag '62.
(MIRA 15:8)

1. Ukrainskiy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva.
(Loading and unloading--Equipment and supplies)
(Mine haulage)

BUBLIKOV, Ye.V., inzh.; FEDOROV, G.D., inzh.; NIKITIN, V.I., inzh.

The PK-1 apron conveyor for mines. Ugol.prom. no.5:38-40 S-O '62. (MIRA 15:11)

1. Ukrainskiy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva.
(Conveying machinery)

BUBLIKOV, Ye.V., inzh.; FEDOROV, G.D., inzh.; SINEBRYUKHOV, B.N., inzh.

PME-1 small loader. Ugol'. prom. no.6:61-63 N-D '62. (MIRA 16:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva.
(Donets Basin--Loading and unloading--Equipment and supplies)

FEDOROV, G.D., inzh.

Using locomotives with gyroflywheels for storage drifts in hydraulic mines. Shakht.stroi. 8 no.3:29 Mr 64. (MIRA 17:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut organizatsii i mekhanizatsii shakhtnogo stroitel'stva.

FEDOROV, G.F.

Feasibility of navigation on the lower Don without sluicing. Mech. transp. 15 no.12:19-20 D '56. (MLRA 10:2)

1. Starshiy nauchnyy sotrudnik TSentral'nogo nauchno-issledovatel'skogo instituta ekonomiki i ekspluatatsii vodnogo transporta.
(Don River--Navigation)